

REMARKS

The Office Action of September 5, 2003, has been reviewed, and in view of the following remarks, reconsideration and allowance of all of the claims pending in the application are respectfully requested.

Applicants appreciate the Examiner's willingness to meet with Applicants' representatives on February 24, 2004 for a personal interview. We believe the interview helped clarify outstanding issues, in particular the 112 first and second paragraph rejections as well as the new matter rejections. In addition, the 102(e) rejection over U.S. Patent No. 6,567,389 was also discussed and differences between the claims and the cited reference were clarified.

As stated in the Interview Summary, the Examiner has agreed to withdraw the 112 first and second paragraph rejections, including the new matter rejections, in view of the explanations provided during the personal interview.

Allowable Subject Matter

Applicants appreciate the indication of allowed claims 30-35 and 91-95.

Drawings

The Examiner has objected to the drawings for not showing certain features that are claimed. Corrected figures are concurrently submitted with this response, indicating "AC coupling", "header modulator means", "header demodulator means", "preamble modulating means", "preamble demodulator means" and "second carrier tracking loop", as claimed in claims 1-11. More specifically, AC coupling is shown at the inputs of A/D converter 41, at RXI and

RXQ of FIG. 1. Header modulator means and Preamble modulating means are shown in block 50, more specifically in block 51 of FIG. 2. Header demodulator means and preamble demodulator means are shown in block 60, more specifically in DPSK Demodulator and Descrambler Portions block of FIG. 5. Second carrier tracking loop is shown by blocks 76, 61-64 of FIG. 5. No new matter has been added.

New Matter - 35 U.S.C. § 251

Claims 123-133 are allegedly rejected under 35 U.S.C. § 251 as being based upon new matter added to the patent for which reissue is sought. Applicants respectfully disagree for at least the following reasons.

The independent claims 123, 125, 127, 132 and 133 have been amended to further recite “and chosen from a set that is substantially orthogonal with low DC components.” Applicants believe that the claimed inventions are fully supported by the specification as originally filed. Embodiments of the claimed inventions of claims 123-133 refer to mapping of bits to Walsh symbols.

Column 5, lines 47-51 of the specification states “the bits are scrambled and then encoded from 4 bit nibbles to 8 chip modified Walsh functions independently on each I and Q rail. There are 8 information bits per symbol mapped to 2 modified Walsh functions.” At column 5, lines 60-63, the specification recites that “the output of the QPSK/BPSK modulator and scrambler circuit 51 is partitioned into nibbles of Sign-Magnitude of 4 bits, with the least significant bit (LSB) first.” In this exemplary embodiment, $N = 4$ where $2^N = 2^4 = 16$, which is equivalent to 8 information bits per symbol (8+, 8-) or 16 information bits total. Therefore, the

claimed inventions of claims 123-133 are clearly supported by the original specification.

35 U.S.C. § 112, First Paragraph

The Office Action alleges that claims 1-29, 36-90 and 97¹-133 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully disagree for at least the following reasons. Column 6, lines 28-33 recites that “the Modified Walsh code may be generated by modulo two adding a fixed hexadecimal code to the basic or standard Walsh codes to thereby reduce the average DC signal component and thereby enhance overall performance ...” As shown in the chart at column 6, lines 10-19, Basic Walsh code 00 is modified to 03, the modified Walsh code. As can be easily determined from the chart, the hexadecimal code 03 is added to the basic Walsh code. The Basic Walsh code set contains one member that is pure DC, as shown by 00. If repeated in communications, the pure DC member conveys little information and disrupts AC coupling. For Walsh codes sent as a spreading pattern, one would want a pseudo random sequence with many transitions and small DC components, as opposed to a pure DC code with no transitions. By adding the hexadecimal code, the pure DC member is transformed into a 03 component, which is no longer pure DC. Therefore, the average DC offset of the modified Walsh codes is substantially improved for AC coupling. A modified Walsh code “reducing an average DC signal component” is fully supported by the original specification.

¹ In the Office Action, claim 96 is included as part of this rejection. However, claim 96 is dependent on claim 91, which has been indicated as being allowable. As claim 96 contains all the limitations of claim 91, it appears that claim 96 should also be allowable. It is believed that a typographical error has occurred.

The Office Action alleges that claims 17-29 and 78-90 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. More specifically, the Office Action alleges that the specification does not describe “reducing an average DC signal component to thereby increase AC-coupling” as recited in claims 17 and 78. Claim 17 and 78 have been amended to recite “to thereby promote AC-coupling.” This limitation is supported by at least the abstract which recites the “modulator may include at least one modified Walsh code function encoder for encoding information according to a modified Walsh code for substantially reducing an average DC signal component to thereby enhance overall system performance when AC-coupling the received signal through at least one analog-to-digital convert to the demodulator.”

The Office Action alleges that claims 123-133 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. As discussed above, Applicants respectfully disagree for the reasons stated above in connection with the new matter rejection.

35 U.S.C. § 112, Second Paragraph

The Office Action alleges that claims 1-29, 36-90 and 97²-133 are rejected under 35 U.S.C. 112, first paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants respectfully

² In the Office Action, claim 96 is included as part of this rejection. However, claim 96 is dependent on claim 91, which has been indicated as being allowable. As claim 96 contains all the limitations of claim 91, it appears that claim 96 should also be allowable. It is believed that a typographical error has occurred.

disagree for at least the following reasons. More specifically, the Office Action alleges that it is unclear what “reducing an average DC signal component” refers to. As discussed above, column 6, lines 28-33 recites that “the Modified Walsh code may be generated by modulo two adding a fixed hexadecimal code to the basic or standard Walsh codes to thereby reduce the average DC signal component and thereby enhance overall performance ...” As shown in the chart at column 6, lines 10-19, Basic Walsh code 00 is modified to 03, the modified Walsh code. As can be easily determined from the chart, the hexadecimal code 03 is added to the basic Walsh code. The Basic Walsh code set contains one member that is pure DC, as shown by 00. For Walsh codes sent as a spreading pattern, one would want a pseudo random sequence with many transitions and small DC components, as opposed to a pure DC code with no transitions. If repeated in communications, the pure DC member conveys little information and disrupts AC coupling. By adding the hexadecimal code, the pure DC member is transformed into a 03 component, which is no longer pure DC. Therefore, the average DC offset of the modified Walsh codes is substantially improved for AC coupling. Based on this explanation as fully supported by the original specification, Applicants believe the phrase “reducing an average DC signal component” clearly points out and identifies the claimed inventions of claims 1-29, 36-90 and 97-133.

With regards to claims 17-29 and 78-90, claim 17 and 78 have been amended to recite “to thereby promote AC-coupling.”

With regards to claim 44-61, claim 44 has been amended. More specifically, “said radio circuit” has been amended to “a radio circuit” to overcome the antecedent basis rejection.

With regards to claims 123-126, claim 123 has been amended. More specifically, “the

selected chip sequences” has been amended to “selected chip sequences’ to overcome the antecedent basis rejection.

35 U.S.C. § 102(e) Rejection

Claims 36, 41, 43, 44, 53-55, 61, 97, 102, 104, 105, 114-116 and 122 are currently rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,567,389 B1 to Honkasalo *et al.* The Office Action alleges that each and every limitation of the claimed inventions are shown by Honkasalo *et al.* Applicants respectfully disagree. In applying the Honkasalo *et al* reference, the Office Action has improperly interpreted “reducing an average DC signal component” as reducing a signal component, such as a Walsh code (see page 6 of Office Action mailed September 5, 2003).

As discussed above, the limitation “reducing an average DC signal component” in one respect refers to the Modified Walsh code “generated by modulo two adding a fixed hexadecimal code to the basic or standard Walsh codes to thereby reduce the average DC signal component and thereby enhance overall performance ...” (col. 6, lines 28-33). As shown in the chart at column 6, lines 10-19, Basic Walsh code 00 is modified to 03, the modified Walsh code. As can be easily determined from the chart, the hexadecimal code X03 is added to the basic Walsh code. The Basic Walsh code set contains one member that is pure DC, as shown by 00. For Walsh codes sent as a spreading pattern, one would want a pseudo random sequence with many transitions and small DC components, as opposed to a pure DC code with no transitions. By adding the hexadecimal code, the pure DC member is transformed into a 03 component, which is no longer pure DC. Therefore, the average DC offset of the modified Walsh codes is

substantially improved for AC coupling.

Honkasalo *et al* is directed to cell phone communications where Walsh codes are discussed in connection with Code Division Multiple Access (CDMA). The Walsh code of Honkasalo *et al* is modified by deleting the last bit (col. 8, lines 40-50). The length is modified from 256 to 255. In contrast to the various embodiments of Applicants' claimed inventions, there is no resulting reduction in DC signal components. It appears that a concern of Honkasalo *et al* is directed to reducing cross correlation between phone conversations, which is unrelated to Applicants' reducing DC signal components. It is believed that the claims are in condition for allowance as Honkasalo *et al* fails to show each and every claim limitation, as recited by Applicants.

CONCLUSION

In view of the foregoing amendments and arguments, it is respectfully submitted that this application is now in condition for allowance. If the Examiner believes that prosecution and allowance of the application will be expedited through an interview, whether personal or telephonic, the Examiner is invited to telephone the undersigned with any suggestions leading to the favorable disposition of the application.

A check in the amount of \$950.00 is attached to cover the three-month Petition for Extension of Time fee, which is being submitted together with the filing of this Response. Applicants also authorize the Director to charge or credit any differences in the required fee to the undersigned's Deposit Account No. 50-0206.

Respectfully submitted,

HUNTON & WILLIAMS LLP

Date: March 5, 2004

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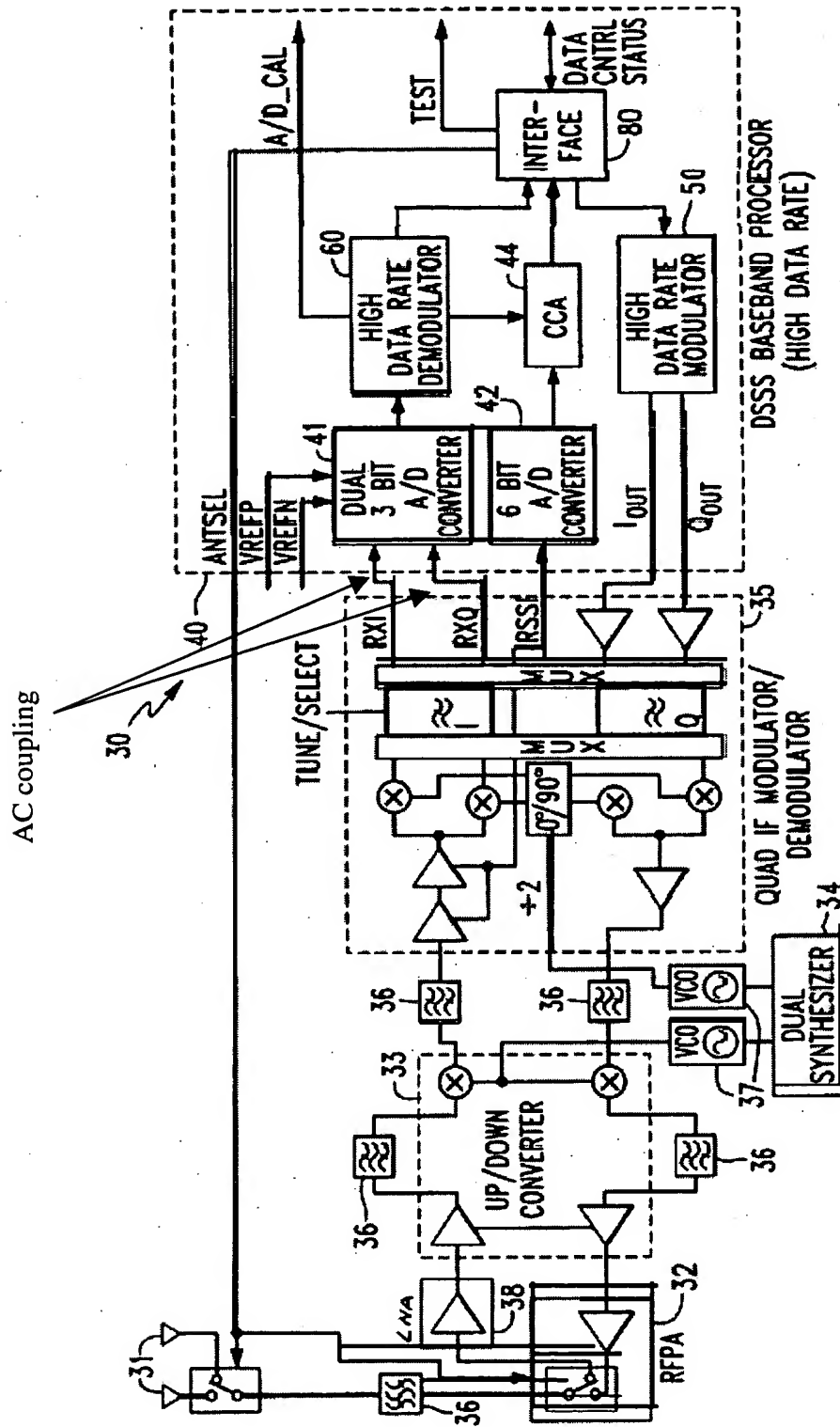
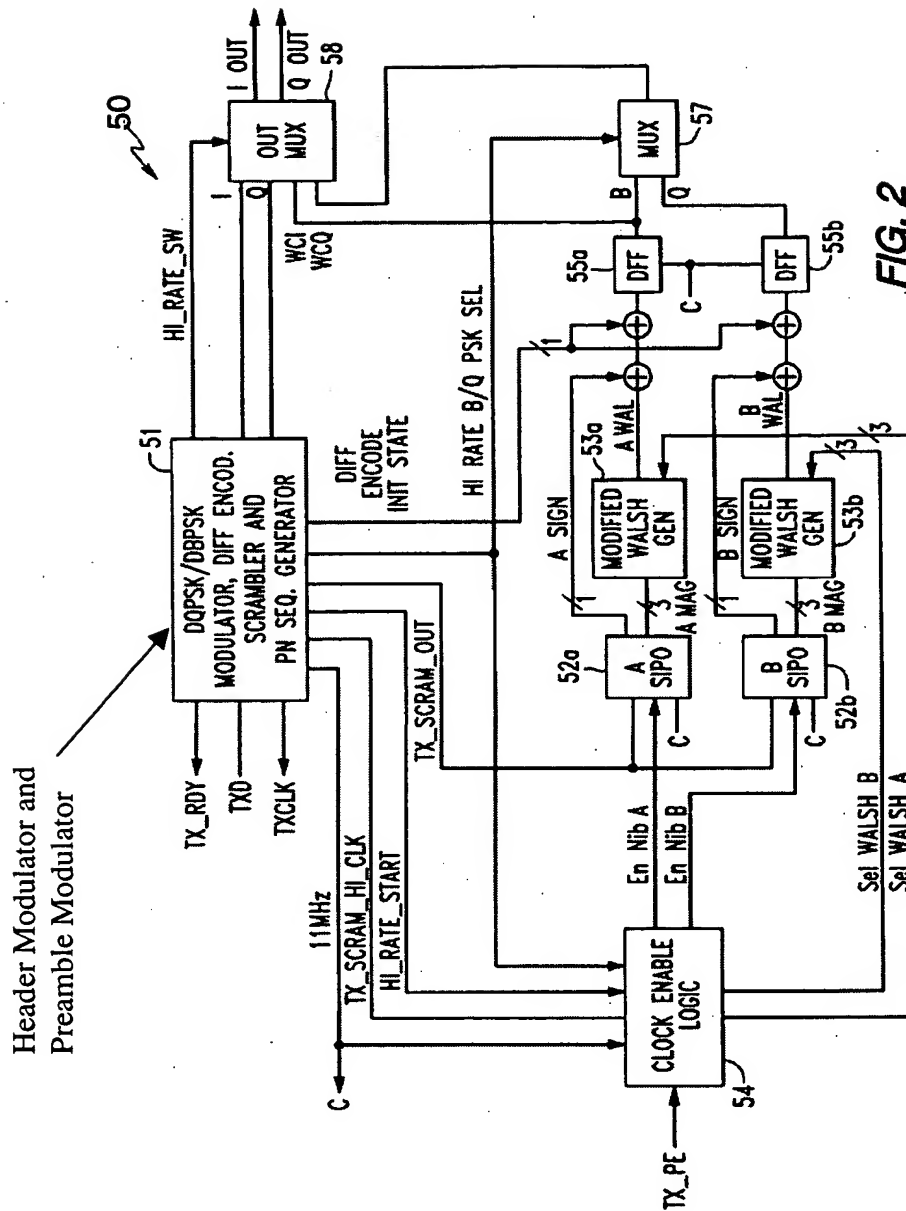
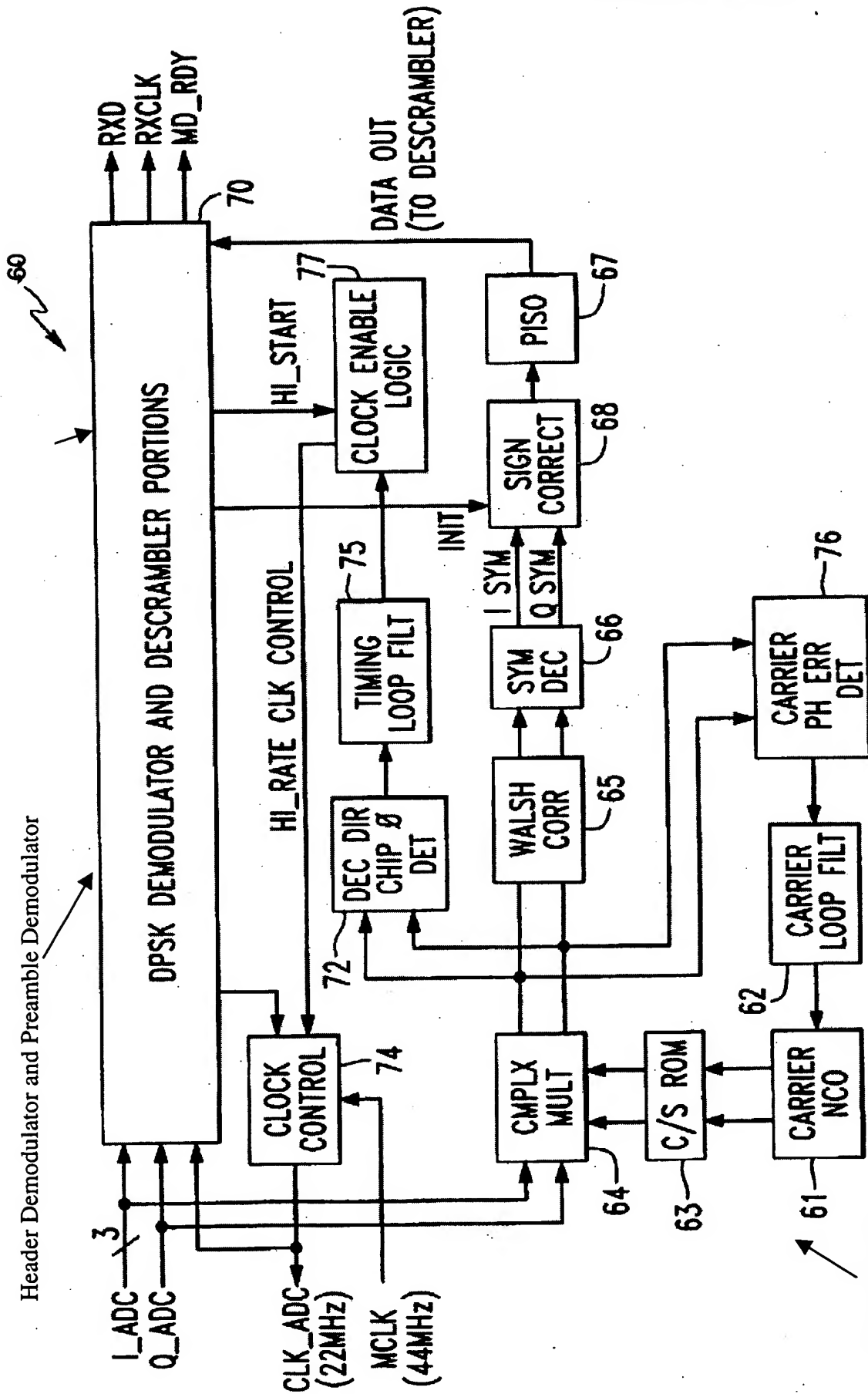


FIG. 1





Second carrier tracking loop includes 76, 61-64

FIG. 5